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Editorial note

This is the 150th edition of MANAGEMENT SERVICES IN GOVERNMENT (formerly the *O & M Bulletin*); and we thought we should mark the occasion in some appropriate way.

We saw recently a copy of the Report of a Treasury Committee appointed to enquire into copying machines, departmental printing, etc. The Report is dated 30th July 1877, and the original is held in the Public Record Office. We could not fail to be impressed by several features of the inquiry and Report: for example, the depth of the inquiry, the speed with which it was completed, the presentation and layout of the Report and, perhaps above all, the quality of the prose; nor could we fail to be amused by some of the passages in the Report.

We think *MSIG* readers may similarly enjoy reading the Report; and to mark our 150th edition we have reproduced it as a special supplement.

Flexible Working Hours in DHSS Local Offices

E. S. DRYE, Department of Health and Social Security

Eddie Drye is in the O & M Unit within the Regional Directorate of the Department of Health and Social Security. —*Editor*

Introduction

In early 1972, the Civil Service Department (CSD) made a detailed study of Flexible Working Hours (FWH)—a system of organizing working time which was proving very successful in West Germany where it had originated and which was beginning to attract the attention of managements (and in some cases the trade unions) of organizations in this country. Around the same time the Kemp-Jones Report on the Employment of Women in the Civil Service was published also advocating that a more flexible approach to hours of attendance should be adopted.[1]

CSD subsequently advised all Departments that in principle they had no objection to staff being allowed to vary the arrangements of their working day or the length of their working week. It was not conceded, however, that this could herald the introduction of a four-day week. CSD recommended that consideration should be given to launching experiments to test a FWH system. A consultative service was offered by CSD (FWH—Guidelines for Application in the Civil Service) who were also willing to provide the finance necessary to cover the cost of any mechanical recording system used during the experiments. The Chief Inspector's Branch of Inland Revenue was the first Department to experiment; DHSS was the second. (A report on the Inland Revenue experiment was published in the November 1973 edition of this journal.[2])

Organization of DHSS

DHSS employs about 85,000 staff. This is made up of 7,500 headquarters staff, 11,500 staff at Newcastle Central Office and 3,500 staff at Blackpool Central Office. Nearly all of the remaining staff are employed in the network of 12 regional and 600 local benefit offices. The complement of a local office can vary from five to 260 staff with the grade of manager differing from EO through to Principal.

Policy towards FWH

From the description of the organization it can be appreciated that

[1] CSD Management Studies 3, *The Employment of Women in the Civil Service*, published by Her Majesty's Stationery Office, price 30p.

[2] *Flexible Hours Experiments* by G. Galey.

within DHSS there are widely varying office environments. In order to co-ordinate action one of the Personnel Branches at headquarters was given the responsibility of formulating policy towards FWH. The strongest exponents of introducing FWH on a trial basis were the Staff Side who saw considerable advantages in the scheme.

By the spring of 1973 the Departmental Whitley Council (DWC) had agreed that a limited experiment in FWH should take place. The basic parameters of a workable scheme were drawn up with the help of CSD.

Broadly the scheme involved a maximum 11-hour working day, core times (i.e. mandatory working time) from 0930 to 1200 and 1400 to 1530 and the ability to carry forward at each four-weekly reconciliation a maximum of 10 hours excess or deficit. It was also provided that staff would retain their existing privileges such as visit to doctor, dentist, hospital, etc., in official time, a form of 'credit' being given to record these and any other authorized absences.

One major change in policy agreed to by the DWC was to remove the need for continual supervision when clerical staff were working. This was essential to enable the executive staff to enjoy the same flexibility as their subordinates.

Pilot run

A headquarters building housing the Personnel Section responsible for FWH policy was selected in which to conduct a pilot exercise which was to run for three months. It was agreed that all staff should participate (from Under-Secretary to typist) and should record their hours at work mechanically on an individual meter or counter. The pilot run would enable Personnel to gain some expertise and identify any problems or difficulties that could arise if FWH was extended throughout the Department. The initial response to the pilot exercise was very favourable and before evaluation had been completed the DWC Staff Side and regional managements of the social security local offices were urging headquarters to launch experiments in local offices.

Local Office experiments

By the autumn of 1973 it had been agreed that experiments in FWH should be conducted in 24 local benefit offices (two offices per Region)—12 offices would test a manual recording system and 12 a meter recording system. A further office testing an electronic recording system was added at a later stage. The selection of offices was left to Regional Whitley Councils and when completed covered 3,000 staff. It was agreed that the experiment would run for six months in each office (but the installation would be carried out over a period as described below).

Installation

The local office experiments were seen as a joint Personnel and O & M project. Personnel were to provide the technical expertise and

determine policy. They were also to act as the liaison agency with CSD who were to offer advice on the effect of FWH on existing personnel standing instructions, and who would also authorize expenditure on mechanical recording systems. The O & M role was to determine how the experiment should be conducted, jointly with Personnel to install the system, to monitor its progress and finally to evaluate the experiment and make recommendations about the general adoption of FWH in the local office field.

If it was to be given an objective trial, then it was important that the concept of FWH should be appreciated by everyone participating in the scheme. To achieve this aim, DHSS made use of the services of a consultant from a firm specializing in FWH to contribute his experience at staff briefings. In addition the consultant demonstrated the meter equipment where applicable.

Installation involved two visits to each experimental office by the tripartite team of Personnel, O & M and FWH consultant.

The first visit was to brief management on the scheme and to offer advice on possible areas of difficulty. Copies of suggested notes to all staff on FWH together with notes on management and supervisory considerations were given to each manager. In the meter offices the siting of recording equipment was agreed. A break then elapsed during which the manager of the local office held discussions with his local staff side and distributed explanatory notes to staff, supervisors and section managers. In the meter offices banks of meters were installed.

At the second visit the team briefed the staff of the office on the history and concept of FWH together with details of the scheme they were to operate. Particular emphasis was placed on the main principles of FWH which are:

(*a*) That work must not suffer as a result of the introduction of FWH.
(*b*) That there was maximum freedom to adjust working hours provided everyone accepted the responsibility given to them.
(*c*) That line management permission was necessary for any absence in core time. Staff were briefed in groups of 20–30 and each session lasted 45–60 minutes. The installation programme, apart from a Christmas break, lasted from November 1973 to April 1974. Emphasis was placed on group discussion in order that staff could examine their work problems in the light of the change in working conditions.

Evaluation—Areas of Enquiry

In order to evaluate the experiment the following methods were adopted:

(*a*) Managers were asked to submit reports based on a framework provided by headquarters after three months and six months.
(*b*) A questionnaire was issued after three months to all staff in experimental offices asking them to indicate what they thought of FWH

and the system being tested in their office (almost 3,000 replied).

(*c*) Supervisors also received a questionnaire after three months asking them to indicate what effect FWH had on supervision (400 replied).

(*d*) The experimental offices submitted the FWH paperwork to headquarters where statistics relating to credits awarded and details of excess or deficit hours carried forward were extracted.

(*e*) Managers agreed to keep a note of the staff time taken up by the paperwork.

(*f*) Regional offices agreed to provide details of uncertificated sick leave taken in the experimental offices during the six months' experiment together with details for the corresponding period in the two previous years.

(*g*) Visits to 40 per cent of the experimental offices were made by O & M.

(*h*) Costings and comparisons were made of the three recording systems tested.

It was appreciated that many of the views or comments expressed would be subjective but they would nevertheless provide sufficient information together with the other evaluation material to determine whether FWH was a worth-while proposition for the local office network.

Evaluation—Results of enquiries

Staff reaction

As was expected FWH proved popular with staff. In fact, a massive 97 per cent of the 3,000 staff involved said that they wished to retain FWH with only 2 per cent preferring reversion to fixed hours and 1 per cent being undecided. On the question of acceptability of recording systems there was a 90 per cent vote for acceptance in manual recording offices, 94 per cent in meter offices and 94 per cent in the electronic recording system. In order to obtain opinions on both systems staff in four offices tested both manual and meter recording systems. When asked to state their preference the staff in these four offices voted as follows, 74 per cent for meter, 14 per cent for manual, 12 per cent either systems acceptable.

According to the replies to the questionnaire the main advantages derived from FWH were as follows:

(*a*) The ability to adjust lunch breaks	(73 per cent of staff)
(*b*) The ability to finish earlier	(69 per cent of staff)
(*c*) A better balance between work and domestic commitments	(62 per cent of staff)
(*d*) The ability to build up a half-day off	(55 per cent of staff)
(*e*) Better travel	(45 per cent of staff)

Taking advantage of FWH almost every day was claimed by 63 per cent and only 3 per cent never took advantage.

Disadvantages arising from FWH were recorded by 8 per cent of staff; these mainly related to extra paperwork particularly amongst the outside visiting staff.

Statistics maintained showed that the normal pattern of working by staff was to start slightly earlier, to take a shorter lunch break and to finish work earlier. It was impossible to monitor arrival times in 'meter' offices, since the meters used do not show arrival and departure times, but in the manual system offices operating a flexible bandwidth of 0800–0930 some 20 per cent of staff arrived at 0800 and 93 per cent of staff were at work by 0845; 41 per cent of lunch breaks were restricted to 30 minutes and 5 per cent exceeded one hour. Prior to actually starting the experiment some managers had expressed concern over the possibility of a mass exodus of staff during the mid-afternoon which would create problems, particularly when the office did not close to the public until 1530. Figures show, however, that under FWH only 15 per cent of departure times fell between 1530 and 1615 and some 41 per cent of staff left the office between 1650 and 1700.

Supervisors' reaction

One group of staff affected by FWH probably more than any other were the Section Supervisors (EO). FWH created the need to adopt a new supervisory style in view of the opportunity of clerical staff to work without a supervisor necessarily being present. Supervisors found they had to involve their staff much more in areas such as work flow, work availability, staff availability, etc. This participative style of management accorded well with the style being adopted throughout the local offices as a result of the introduction of management by objectives.

Initially supervisors felt that FWH was going to create too many problems and that the paperwork would be onerous. Based on experience, however, 66 per cent of the 400 supervisors who replied did not consider that FWH placed extra responsibility on them and 81 per cent did not find the paperwork onerous.

On the question of changes in staff relations or sectional efficiency 44 per cent of supervisors considered that staff relations had improved (1 per cent thought they had declined) and 31 per cent thought efficiency was greater (2 per cent thought it worse).

It is essential that staff accept the responsibility given to them under FWH. If they fail to do this and fail to communicate to the group any proposal to change their pattern of work, without regard to the needs of the section, then they place an intolerable burden on the supervisor and the system could break down and FWH become a failure.

Management reaction

Managers' reactions generally varied from qualified to enthusiastic approval. The misgivings which they generally had prior to commencement of the scheme were soon removed after experience. Many of them stated, with hindsight, that they had expended a great deal of time and

energy prior to its introduction trying to anticipate potential problems of FWH. In fact, very few problems arose and none of these was insurmountable. FWH did, however, highlight existing minor problems, e.g. inability of finance staff to get away on time, and caused management to give higher priority to resolving these problems than they would have normally done. No evidence was obtained indicating that FWH produced a measurable increase in productivity. Work was probably processed earlier in the day which in a Department issuing instruments of payment is helpful. The quiet times at the beginning and end of the day were conducive to better quality work.

The effect of FWH on recruitment and retention was marginal. Unfortunately, due to recruitment procedures, it was not possible for publicity aimed at potential recruits to include the fact that FWH operated in certain offices. Staff recruited, however, showed considerable interest in FWH when going through the induction stage. Most of the resignations were for reasons which could not be influenced by FWH, e.g. spouse moving from the district. There was no evidence that FWH had any effect on uncertificated sick leave.

The one area where FWH produced the greatest dividend was in the question of staff morale. The freedom within limits given to staff of adjusting their hours to their personal needs produced a better working climate. Staff felt a greater sense of responsibility resulting in better co-operation and special efforts to reach objectives.

Only one office experienced any adverse reaction to FWH after three months and this arose because of management's failure to keep an open mind and objective approach together with the staff's failure to accept responsibility for ensuring that work must not suffer. A re-appraisal of attitude by management together with a rebriefing of staff on the concept of FWH rectified the adverse reaction and after six months both staff and management wished to retain FWH.

Conclusions

FWH is extremely popular with staff. Comments such as 'the best thing since the five-day week was introduced' are not uncommon. In fact once FWH is introduced into an office any attempt to withdraw it would meet with vehement reaction from staff.

Supervisors do not consider that FWH places an additional burden on them nor is the paperwork considered onerous by the vast majority, but it does require some differences of approach in organizing the work of their sections.

Management do not consider that FWH increases productivity but they think it may well improve quality. There are favourable signs that it might help recruitment. It does not create any insurmountable problems. Many managers in fact paid tribute to the responsibility shown by staff. People are creatures of habit and staff going over to FWH quickly get into a pattern of working. Management are soon aware of this pattern and organize accordingly. The average build-up

of carry-forward hours is only around 3·7 hours per staff member. With a core time of 0930–1530 and a minimum lunch break of half an hour, less than 30 per cent of working time is flexible. In consequence there are no widely varying disruptive movements of staff on a daily basis. It seems probable that FWH is worth introducing for its very favourable effect on morale and the working climate.

Once FWH is accepted as a worth-while proposition then the question arises as to what is the best recording system to use. The simple answer is that there is no one ideal system to suit every office environment. Any system adopted involves an element of trust. Staff are generally happy with the system that they are offered. The manual system does not involve any capital outlay, but it is costly in terms of staff time spent administering it. It is not altogether accurate. It is more open to abuse and in consequence can create bad feeling between colleagues. It is probably best suited for the small office with a staff of up to, say, 30–50. There are several mechanical recording systems on the market. All involve a considerable capital outlay, but they are less costly in staff time in administering. They are accurate, less open to abuse and, on the evidence we have, are preferred to the manual system by staff and management, because they act as an independent record of hours worked.

At the time of writing the actual cost of introducing a FWH scheme is being assessed. In calculating the cost the following items will be considered:

(*a*) All recording systems
  (i) Extra heating and lighting.
  (ii) Cost of paper and printing.
  (iii) Cost of supervisory time spent reconciling hours worked by their staff.

(*b*) Mechanical system
  (i) Cost of equipment.
  (ii) Cost of installation.
  (iii) Cost of service contract.

(*c*) Manual system
  (i) Cost in staff time lost due to 'rounding' of starting and finishing times.
  (ii) Cost of paperwork time.

Management Training and Development in the Royal Dockyards

S. T. FLANNERY and K. TROWELL, Ministry of Defence

Mr. Flannery is Director of Dockyard Manpower and Productivity; and Mr. Trowell is Senior Training Officer in the Dockyard Department. —*Editor.*

Background

For nearly 20 years the Dockyard organization has maintained a strong and practising interest in management training. The original stimulation to do so emerged from a major reorganization of the Dockyard management structure and the simultaneous introduction of formal management control procedures. That was in the late 'fifties and the changes in the way business was to be conducted were widespread and fundamental; so we had not only to modernize the attitudes of managers and staffs, but also to provide formal instruction in management techniques and skills.

This process took all of 10 years to reach a state of absorption where it could be fairly said that the general body of people in the business were willingly adopting forward-looking managerial concepts rather than wishing themselves back in the familiarity of old practices, technocratic managerial styles and simple doctrines of authority and responsibility.

The training methods used have been partly internal and partly external. The external courses were for general widening of management awareness and infusion of outside industries' ideas, whilst the internal courses were for more directly applicable material. The training time had to be given without depleting the normal attention to Dockyard programmes of work, and without obstructing the consolidation of reorganization change in the Dockyards. In consequence much difficulty was encountered in extracting the right kind of people from normal duties to take the training, and in convincing the trainees of the relevance and applicability of all they learned.

To provide permanent facilities for internal training purposes we set up Management Training Centres in each of the Dockyards (at Portsmouth, Devonport, Chatham and Rosyth) and at headquarters in Bath. In addition, a Management Techniques and Training Research Unit was set up at Portsmouth with the primary task of conducting long courses on work-study related to warship refitting technology.

Thus far our experience will have been typical of many changing

organizations. Unfortunately, progress in spreading the actual changed management organization and procedures to all Dockyards was much slower than had been intended. This was because of competing demands for staff and because of the need to design and build modern central Dockyard offices to replace the dispersed and antiquated premises with which the war had left us.

Most of that is behind us now, but the total time span of events to date has permitted major technical change, in the shape of the nuclear powered submarine, to impose itself on the scene. This has introduced some quite new factors, and has raised the standards required of some features of management.

So what scene do we contemplate today in the matter of Dockyard management training? Who are the people to be trained, and what determines Chief Executive Dockyards' (CED) training policies?

The staffing of the Dockyard organization is as follows:

PERSONNEL IN H.M. ROYAL DOCKYARDS—1974
(not including Headquarters Staff)

	Staff in post	*Annual turnover*
Non-Industrials and Service Personnel		
Professional staff—Royal Corps of Naval Constructors and Royal Naval Engineering Service	185	38
Naval staff—Mechanical and Weapons Engineering ..	66	22
Professional and Technical Officers (P & T grades, ex, supervisors)	4,410	193
First-line Supervisors	1,166	37
Civilian Instructors	196	4
Administrative and Executive Staff	109	30
Clerical Staff	451	117
TOTAL	6,583	441
Industrials		
TOTAL Industrial Labour Force	25,400	

The management function is very comprehensive in scope and is accorded substantial delegated authority for this reason. From the turnover figures it can be seen that there is a sustained need for training and management development.

For those readers who may be unfamiliar with the management structure of a Dockyard, this is shown at *figure* 1. The functions of the various departments will be readily seen to attract distinct requirements for training in a number of techniques.

The aims of Dockyard management, its processes and styles have always been vulnerable to some degree of change to meet the requirements of the time; we may, nevertheless, express our broad purpose.

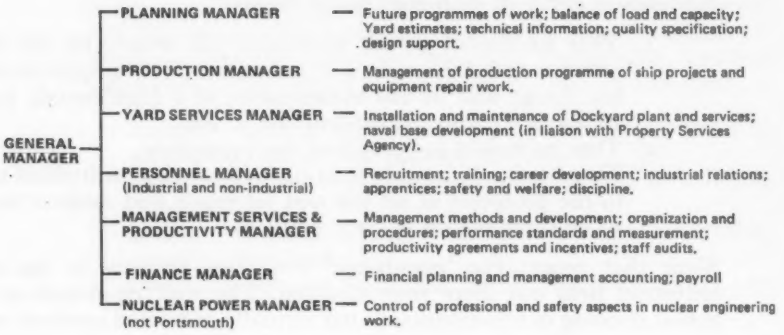

GENERAL MANAGER
PLANNING MANAGER
Future programmes of work; balance of load and capacity; Yard estimates; technical information; quality specification; design support.
PRODUCTION MANAGER
Management of production programme of ship projects and equipment repair work.
YARD SERVICES MANAGER
Installation and maintenance of Dockyard plant and services; naval base development (in liaison with Property Services Agency).
PERSONNEL MANAGER (Industrial and non-industrial)
Recruitment; training; career development; industrial relations; apprentices; safety and welfare; discipline.
MANAGEMENT SERVICES & PRODUCTIVITY MANAGER
Management methods and development; organization and procedures; performance standards and measurement; productivity agreements and incentives; staff audits.
FINANCE MANAGER
Financial planning and management accounting; payroll
NUCLEAR POWER MANAGER (not Portsmouth)
Control of professional and safety aspects in nuclear engineering work.

Figure 1

The Dockyards exist to support the Fleet; they have to do an enormous variety of work to high technical standards; they are large industrial enterprises; and they spend large sums of public money. A good performance in any one of these areas does not inherently satisfy the others—nor quench criticism about them if they display failings in their own right. Indeed it is a matter of experience that no permanently explicit objective can be expressed which will, at all times, enable management to optimize these conflicting considerations in a way that can guarantee warm acceptance by all concerned.

All the same, the management system under which programmes of work are undertaken must make provision in all its procedures for the work, money and the people to be served by all who play a part in the system. We have come to feel, therefore, that management training must be aligned with the total running system of management itself, notwithstanding that from time to time particular skills and specialisms within the system may require special emphasis.

We have, in fact, been dwelling for the past two years in a situation where the need for changes in parts of the management organization and in management skills have become so linked with problems of objectives and job satisfaction that we are trying out the operation of a Management Development Programme (MDP) in which the main precepts of management practice are embodied in a guided cascade communication process, i.e. down the line management chain, and related to the actual job to be done. The process is described below.

Analysis of CED's training objectives

Formal management training in the Dockyard organization was first established 20 years ago. A report of that time set out three objectives that should apply to each member of the staff:

(1) That he should do his particular job better, by the more effective use of the men, material and capital equipment under his charge and by the maintenance of a high morale in the staff and workpeople subordinate to him.
(2) That he should be 'prepared' for promotion.
(3) That he should be able to bring an analytical attitude of mind to the problems of his job and his grade and make a worthwhile contribution to their solution.

Since that report the 'population' requiring training in the non-industrial field has more than doubled. The staff employed on the actual training of non-industrials has virtually remained constant as:

> four at headquarters; four in each of the four home Dockyards, the staff at Portsmouth being supplemented by three who form a Management Techniques and Training Research Unit—a total of 23.

The policy and total task are co-ordinated at headquarters by an Assistant Director Management Systems and Training under the Director of Manpower and Productivity.

The objectives are the same as they were 20 years ago. What has had to change are the methods by which these objectives can be achieved.

Adoption of a basic common approach to the subject of management training

Up to six years ago each Management Training Centre had been allowed to develop its own course material with little or no guidance from any central headquarters body except in the co-ordination of staffing, finance and the like. Newly appointed training officers were sent to varying outside agencies, and returned to translate their new-found knowledge into terms that would suit their audience in a Dockyard environment. With such a situation it was inevitable that our management courses had become a veritable jumble of 1–1½-hour sessions of 'they must have some of that', a mixture of 'need to know' and the latest 'in subjects', with an increasing amount of duplication in the various courses that were being run.

There arose, therefore, a clear requirement to gather all the experience we had gained and to adopt a basic common approach to the subject of management training which would better meet the objectives to which we were committed.

The Management Profession, an American Academy of Management award winning book written by Louis A. Allen, was selected for the purpose. There were three main reasons why:

(1) It was based on world-wide research rather than the author's personal opinion as to how managers should perform. The research was based on what successful companies and their managers did as opposed to what inefficient organizations did or did not do. The result was a straightforward check-list of four management functions: Planning, Organizing, Leading and Controlling (POLC)—broken down into 19 activities:

> *Planning*—forecasting, determining objectives, programming, scheduling, budgeting, policies, procedures.
> *Organizing*—determining structure, delegating, establishing relationships.
> *Leading*—decision-making, communicating, motivating, selecting, developing.
> *Controlling*—setting standards, measuring, evaluating, correcting.

(2) The logical approach to the identification of management work and operating work. An occupational disease in technological-based organizations, such as a Dockyard, is that invariably management put too little time on management work and too much time on operating work.

(3) A concept of four-direction management. Up till this time all our training effort had been on the management of subordinates. However, with the gradual burgeoning of the functional management organization shown in figure 1 and of all its supporting formal procedures, now coupling up with matrix style project and labour resource management, it emerges that the concepts of planning, organizing, leading and controlling in sideways and even upward directions become not only relevant but of vital importance.

These concepts and vocabulary were made common throughout the training organization and form the basis of all our management courses, putting the emphasis on such functions and activities as the grade, post and task demand. As a policy it is now mandatory on or before appointment for staff to have a four-week basic management course.

The basic courses are supplemented by other courses internally or externally by reason of appointment to a specialist task or as a result of an analysis of the training requirements of the staff reports.

The third objective—management attitudes

Up to three years ago it would be true to say that training had concentrated on the junior levels of management and little had been attempted to either analyse or improve on the third training objective:

> 'That he should be able to bring an analytical attitude of mind to the problems of his job and his grade and make a worth-while contribution to their solution.'

That is, in spite of our management training effort we had not necessarily consolidated good managerial attitudes throughout management, where:

(*a*) There is a desire to improve performance by self-development.
(*b*) There is a conviction that good leadership of staff must be provided.
(*c*) There is a concern for the improvement of the time and cost performance of the organization.
(*d*) There is a constructive attitude towards top management and functional specialists.

The whole subject of management development is too complex for slick solutions. It is a much longer-term investment than some people appear to think. Many accepted methods of working and management styles themselves have been questioned.

CED Management Development Programme

A system of communication has come about by a development of the cascade process. Some two years ago the senior and middle management were, after some preparatory training for senior management, formed into 42 groups of 12–15 managers. Generally the groups were formed of the senior manager with his subordinate managers in the various CED departments. These groups met fortnightly with a Chief Management Training Officer (CMTO) to discuss particular aspects of management. The programme of 29 sessions over a period of 18 months was based on the functions and activities of management; each session being a theory presentation by the trainer followed by a discussion led by the senior manager of the group as to the application of the theory to the group's work. Between each of the sessions work assignments were conducted by participants on individual and section improvement plans, a theme of objectives running through the whole programme.

The whole programme was administered by a project leader at headquarters responsible for the material content and conduct of it. Each Dockyard formed a steering committee under the chairmanship of the Management Services and Productivity Manager, the whole being co-ordinated by an Assistant Director Management Systems and Training at headquarters.

The first phase of this cascade has been completed, and early results suggest that it is on the right lines. In answer to a questionnaire senior managers have said that they have benefited personally by the programme; that from the outset a better group relationship was emerging and the groups were tending towards a much more critical look at themselves rather than to blame others.

These remarks still seem relevant, but, more important, management objectives was only one activity of CED's total MDP. It has, therefore, been allowed to assume its own importance rather than an imposed

technique by specialist staff. It is now seen as the most significant activity by the participants and it is on this fact that we can build.

We would claim that this is the real achievement; that by the participants' own efforts we have established the base for an extremely effective communicative, consultative and participative network with management improvement plans within the MDP as the focal point. With the continuation of the MDP to include more junior levels of management, the programme ceases to be an experimental peripheral activity of the organization, but becomes an integral part of a communication network.

First, we have assessed our managerial performance, its strengths and weaknesses within the present phase of the MDP, and this has been a continuous process since we started. Done sincerely this should have exposed opportunities for improvement plans and with the aid of management objectives should have been the basis for a deficiency analysis and the formulation of specific objectives. Concurrently with this a basic strategy has been progressing within CED and its top management assessing expectations of changing organizations (project management), new costing and production policies, and tighter planning and control. Also external and forming restraints on those expectations are the general economic situation, naval requirements, and increased trade union participation and involvement. These are only examples within a typical strategic plan of any on-going organization; it is, of course, never perfect. Nevertheless, if coupled with a clarification of CED's objectives it should stimulate a disciplined approach to radical change and improve communications, and, by so doing, enable a similar deficiency analysis to that in the MDP to help to evaluate alternative courses of action to achieve critical objectives. For the continuation into a second stage to be acceptable to all levels of management and to make the total investment of time worth while, it now seems opportune to move towards a programme which involves both the continuation of the MDP and the breaking down of the strategies into a series of tactical plans, shorter in time span and much more detailed in content.

That is: we have our MDP proceeding in the form of improvement plans for management, the proposed programme for which has been discussed and approved. It is based on a continuation of both specific objectives of the first stage and details for the remaining levels:

(1) The main purpose of the job.
(2) Position in the organization.
(3) Scope of the job.
(4) Limits of authority.

By so doing we have a means of seeing at what levels we can best introduce immediate plans, not only for the continuation of improvement plans in the form of specific objectives from the first stage, but also for the integration of certain aspects of the strategies that

CED or general managers may wish to introduce as part of:

(1) Organization planning;
(2) Management systems;
(3) Resource development planning; and
(4) Operations planning and control;

for which detailed plans may have to be evolved within the MDP itself to achieve their introduction so that participants are given the opportunity to acquire the skills needed, and are motivated by their involvement and participation to accept them. The degree of detail must vary according to the size and complexity of the activity but at the end of this work every function and unit is clear about the results it must achieve, these having been passed to managers in the form of division objectives.

A current example serves to demonstrate how CED's management development and training system works, remembering that at the end of our first phase we have established a common vocabulary, a set of principles and management knowledge as a basis.

The organization is presently engaged in preparation for moving into a situation where we will have no PBR (Payment by results) schemes. Such a task means changes in procedures, responsibilities and most certainly management attitudes. This will involve us in a large management education exercise for most of our 7,000 non-industrials.

A large percentage of those vitally involved in the new procedures will be covered by the extension of the MDP. In the past many perceptive plans made by CED have never been fully achieved because managers have not been given the opportunity to acquire the skills needed, nor motivated to accept. Through the medium of the MDP we can now lead up to the implementation date by a series of discussion groups, once again led by the Deputy Manager, briefed on the theory by the CMTO or other specialist. The subject headings are selected from our original 29 sessions each with its own specific objective for that particular group.

The 630 estimators who require re-training in both British Standards on which certain performance factors will be based and the procedures involved will be trained centrally by our Management Techniques and Training Research Unit. The remainder of those not so particularly involved being trained in the local Management Training Centres.

Conclusion

The more thorough, participative and relevant one's training is, the more searching becomes the desire to see actual application and committal on the part of all elements of management right up to Chief Executive. The concurrent development of management systems designed to give high assurance of meeting output targets (i.e. to plan and prepare to succeed with one's projects rather than just to do enough to have a bare hope of succeeding) also encourages review of

corporate and personal objectives. In this way the doctrines of training on the one hand, and of management of operations on the other, have found themselves coming together in one system of communication serving both the need for change and the demand for involvement, and the need for renewal as staff pass their ways through their careers.

We have completed our first cascade across all Dockyards covering the grades between Department Manager and Centre or Trade Manager. The three or four grades below that level (the big battalions) have been just started. We are not finding it easygoing, but there is marked success in changing attitudes in management. We shall, however, have to judge eventually whether this experiment offers real payoff.

As always, one finds that progress depends on where one starts from and neither our Dockyards nor our staff are equal in that respect. By and large we believe that our training problem largely boils down in the end to 'How to motivate'. Bearing this in mind avoids the risk of training becoming an end in itself.

A New Look at Libraries and Documentation

M. R. GERSHON, Civil Service Department

Bill Gershon is Head of the Documentation and Information Retrieval Section in the Specialist Subjects Branch, CSD Management Services. —*Editor.*

Information explosion

During the 1960s a lot was heard about the so-called 'Information Explosion'. This was the great, and accelerating, volume of published material—especially in science and technology—that threatened to engulf us if we did not control it.

Nobody would defend the solution favoured by the Calif Omar in 642 when he burned down the great library at Alexandria, but, for the modern age, the problem really started in the 1440s when Johannes Gutenberg invented movable type. The seventeenth century saw the rise of publication as a typical academic activity and, by the 1960s, the statistics sounded quite drastic. Each year the United States was producing five million books. Each year Americans were reading 25 U.S. billion newspapers and 60 million magazines. World publication was doubling every 45 years, about three times the growth rate of the population itself.

Cynics would say that much of this was dross and that a good deal of published material, even on 'serious' subjects, is either ephemeral or a duplication of earlier work. It includes straight commercials for equipment and texts suitable only for filling spaces between advertisements, together with a certain amount of low-grade effluent from the post-graduate degree industry.

The problem

But unlike Mr. Podsnap, we cannot dispose of our problems by sweeping them behind us, and there remains the problem of handling an increasing volume of worth-while published material. We have, in addition, the comparatively new problem of trying to control an increasing volume of semi-published material in the form of limited-circulation reports and even internal memoranda.

'Handling' and 'controlling' information means:

(*a*) *screening* it so as to;
(*b*) *select* from it what is worth-while; then
(*c*) *classifying* it so that when it is;
(*d*) *stored* it can be;
(*e*) *retrieved* and *accessed* by

(*f*) *users* who will almost certainly not be the original classifiers and who will assume that useless material has been;
(*g*) *disposed of* by transfer to a less active store or
(*h*) *destroyed.*

The traditional means for dealing with these problems has been the library. Libraries have been the main centres for recorded information and librarians have been the traditional sources of professional experience in organizing it, wielding their twin instruments of the catalogue and the book classification.

There are many libraries in the Civil Service, including the well-established network of departmental libraries which have between them a stock of 2½–3 million books. In addition to published material, the Civil Service has special responsibilities for non-published material under the Public Records Acts. This responsibility is peculiar to the public sector, and had its origins in the need for law courts to keep records of decisions as a public duty. The result has been the tradition of the registrar who has now, in Civil Service departments, become more than merely a curator of archives. He is also the departmental librarian for non-published, live material. His 'library' is a huge collection of unique, active and often sensitive material, many times the size of the collection of published material in the departmental library itself.

A problem for the Civil Service is the control of this mass of paper and the information it contains—having regard to both the resources going on to it and the service coming out.

Possibilities

The first possibility that springs to mind is computer processing, and indeed the Council on Library Resources, established in the United States in 1956 by the Ford Foundation, set up a study in the early 1960s on the Library of the Future. Dr. Licklider who led the study reached a wide audience through his book* which set out existing computer techniques on documentation work. Since then there has been a flood of literature on the use of computers in documentation work.

The computer was originally developed for calculation, but it can also be used for the storing and retrieval of large masses of textual material. However, its storage capacity, though large, is limited in comparison with the full text of a library of books.

Its great advantages are in manipulating and sorting textual data, particularly in the condensed form of indexes and references, which it can do much faster and more surely than human beings. Moreover, techniques now exist for arranging output that can be directly printed to graphic art standards and for gaining direct access to a computer-held file by means of keyboards and displays.

* *The Library of the Future* by J. C. R. Licklider, MIT Press, 1965.

Its great disadvantage is the cost, not so much of the processing itself but of the laborious translation of text into machine-readable form and of the careful programming needed to make a system work. Nevertheless, computer systems can be made economic with careful planning and management and, with the cost of human labour rising faster than that of computer processing, there is little doubt that we shall have to turn more and more to computers to solve our documentation problems.

Another technique we shall also have to turn to is microcopying. Typically this is capable of reductions of 20–25: 1 but some techniques permit reductions up to 160: 1. Not only has this enormous advantages for storage, but the cheapness of duplicating microforms means that material is easy to disseminate. The day of the abstract journal may now be numbered when cheap and easy access to originals is possible through microforms and associated indexes.

Good indexes are essential because a reduction in size does not mean a reduction in complexity. Having a complete microform scientific library in an office drawer does not make the material intellectually any more accessible than if it were spread over an acre.

Leaving aside such new techniques, some interesting possibilities also arise from changes in attitude. Possibly the two are not entirely unconnected.

Looking after documents, whether as a librarian or an archivist has often meant assuming the traditional role of conservator. This role is an honourable and civilized one and, for some collections, it is the right one. For others, what matters is the accessibility of the collection to users, the removal of surplus stock, the opportunities for browsing and simple reference tools that do not have complex, idiosyncratic rules to baffle the laiety.

These user-oriented attitudes are spreading; so have other changes in attitude which in the last decade have resulted in great progress being made towards standardization.

For instance, one important development, that started in this country but is now international, is giving a unique number to each publication. This started with Standard Book Numbers, and is now spreading to other materials (e.g. Standard Serial Numbers) as well as to most other countries. A further development in standardization has been the MARC system which started in the U.S. Library of Congress and has now become an international system for identifying parts of a bibliographic description. There are now also standardized cataloguing rules, standardized layouts and moves towards standardized classifications and indexing vocabularies.

But all is not sweetness and light of course. Re-inventing the wheel is still a popular pastime even though the message has been received that at least all the axles should be horizontal!

Clearly, if full advantage was going to be taken of new techniques and possibilities it ought to be taken on a Service-wide basis. CSD Management Services has a standing responsibility interdepartmentally

for questions of administrative improvement. Moreover, its Specialist Subjects Branch contains a section formed in 1970 and briefed to look at problems of documentation and information retrieval following an internal report recommending this. The branch now consists of 11 people (6 computer systems analysts and 5 O & M practitioners) covering, among other things, problems on libraries, registries and filing systems, whether the solutions involve organizational, computer, microcopying or traditional methods questions.

The brief of this section is, in the words of CSD's published aims: To maintain a specialist capacity in documentation and information retrieval so as to respond to demands from departments for advice and assistance; and to initiate and pursue programmes of studies and assignments.

Library cataloguing

A look at its activities in one area (libraries) may be of interest. Here, one of its main tasks recently has been the use of computers in departmental libraries. Computers have been increasingly used in libraries over the last 5–10 years as systems have been developed for using them in 'non-numeric' applications. Much of this work has been experimental but increasingly it has been 'for real'. With nearly three million books in the central departmental libraries there was a clear prima facie case for a deeper look at the possibilities of using computer processing there as well.

A feasibility study was made and this recommended that, from the point of view of both service and economy, it would be worth going ahead and designing a detailed system for the manipulation of catalogue records. It was estimated that if all departmental libraries participated, development costs would be covered in about 18 months of operation.

Catalogue records were thought to be the right place to start. The catalogue is the central file of bibliographical information in a library. Making it a computer-held file would maximize such benefits as being able to use bibliographical material from the British Library, exchanging bibliographical data between the departmental libraries themselves and using the catalogue file as the basis of other library sub-systems such as book ordering.

The feasibility report was accepted by Establishment Officers in 1973 and, during the autumn of 1973, a team was assembled to design a catalogue record system. During 1974 the team have been constant visitors to departmental libraries and have made a thorough study of departmental library requirements in the field of cataloguing and listing. They have also made contact with most people in this country working on similar problems. At the time of writing, the team is putting the finishing touches to their detailed systems report.

The project, called INTERLIB, is being overseen by an inter-departmental committee of librarians chaired by CSD Management

Services. The committee, which includes the head of the Documentation and Information Retrieval Section as well as a liaison officer from the Central Computer Agency, sees papers prepared by the team. The papers, as they are agreed, will form sections of the detailed systems report.

The INTERLIB system follows that outlined in the feasibility report. It will use straightforward batch-processing techniques operated on a bureau basis. It is designed to manipulate catalogue records centrally and, unlike the one currently being suggested for German departmental libraries, it is not a system for central cataloguing.

Libraries will continue to do their own cataloguing unless they choose to use British Library MARC material or cataloguing data input by other libraries. The catalogues themselves will be produced by COM and there are no plans for conversion of existing catalogues. The system will also produce accession lists, and a form of union catalogue will be available should libraries want it.

The benefits of the system will be:

(*a*) Much greater knowledge of what is available in the departmental library system and where it can be found.

(*b*) Complete, compact catalogues cheaply and easily available where they are needed instead of confined virtually to one location.

(*c*) Internationally compatible formats.

(*d*) The availability of catalogue data for other machine-made listings in the library.

(*e*) A modest but significant saving of resources compared with other systems.

Library organization

At the same time as the computer system was being worked out, another dimension of departmental libraries was being explored—that of a more rational arrangement of subject areas. It started some years ago as an investigation whether a Whitehall economics library was feasible, but it soon became clear that a wider subject specialization was needed.

Departmental libraries naturally specialize in the subjects that interest their departments, but our study showed that considerable overlap existed in fringe areas and in general subjects having a wide interest such as economics and management.

The report of the investigation recommended that libraries should clarify their aims, that these should include a definition of subject areas and that eventually there should be co-operative cataloguing.

However, the question of subject specialization was overtaken by a wider-ranging organization study. This was beyond the resources of the Documentation and Information Retrieval Section so, after the usual tendering and selection procedure, P-E Consulting Group Ltd. were

asked to undertake it with full-time assistance from an assignment officer from the section.

The study was supervised by a steering committee of representative departmental divisional heads chaired by the head of CSD Management Services (General) Division. The study was completed last summer and the recommendations of the steering committee, based on the consultant's report, were endorsed by Establishment Officers and librarians.

Some of the recommendations made were that:

(*a*) Aims and objectives should be clarified.
(*b*) There should be closer control of library expenditure and accountability.
(*c*) Subject specialization should be encouraged.
(*d*) Stocks should be systematically weeded and reserve stocks disposed of.
(*e*) Technical development should be centrally co-ordinated.

Most of these recommendations fall to departments to implement, but P-E are to undertake a further assignment on reserve stocks, starting early in 1975, again with the full-time assistance of an assignment officer.

The future

Confucius said 'Study the past if you would divine the future'. For departmental libraries the future must lie in developments of the two major studies already discussed.

But libraries are part of a wider system of documentation. Those who need documentary support in their work—and this is almost everyone working in administration—need that support from both published and non-published sources.

Last year, the Documentation and Information Retrieval Section carried out a wide-ranging study (INTERDOC) of how non-published documentation and internal papers are dealt with in the private sector and in the central administrations of some European countries. Nowhere was any real attempt being made to integrate meaningfully the published and non-published sectors with their different traditions.

Maybe this is for the more distant future, when there will be greater acceptance of overall documentary support as a vital administrative activity which a half-million strong administrative machine such as the Civil Service will ignore at its peril.

Management Accounting System for a Health Authority

N. MUSGROVE

Norman Musgrove is Treasurer of the Moorfields Eye Hospital. Moorfields is a London postgraduate teaching hospital which is classed as a separate Health Authority under the National Health Service Reorganization Act 1973. The hospital has about 900 staff on its payroll. —*Editor.*

Introduction

The development of a comprehensive integrated management accounting system for use at Moorfields Eye Hospital began in the early 1960s. During the intervening years regular additions to, and adaptations of, the system have been made according to the demands of an expanding Service. The MISER (Moorfields Information System Exception Reporting) system in its present form has been fully operational since April 1973 and is the joint product of the Hospital and its computer consultants. The system now incorporates the modern management standards and practices demanded by the Service and will meet the information requirements of all Authorities. The reporting system ensures stricter control of expenditure against budgets, provides early warning of potential deviations and produces a ready appreciation of future costs. The system provides an informed basis for forward planning and decision-making.

MISER is not one large and complex program. It is a modular system which at present consists of a suite of 27 interlocking programs (the twenty-eighth will be operational in April 1975) readily adaptable to meet the need of a particular Authority.

The modular approach which has been applied to the problem of complex computer programs has resulted in a system with built-in flexibility. The method has ensured that up-dating and changes to meet current requirements can be carried out with relative ease and minimum disturbance to the basic system.

Continuity and flexibility have been ensured by an arrangement whereby source programs and documentation remain the property of Moorfields. The validity of this policy is demonstrated by the fact that over a period of 12 years there have been four changes of service bureaux, and on each occasion full advantage has been taken of more advanced techniques and the availability of up-to-date equipment.

The decision of the Department of Health and Social Security (DHSS) to change the approach to Health Authority accounting from

subjective to objective necessitated an extension of the programs which were in use in 1972. It was recognized that a common accounting structure would be required in order to meet the DHSS criteria for objective analysis. It also became obvious that this standard level of analysis would be insufficient if the reasonable demands of local management for more basic information were to be met. The decision was made to introduce a third form of analysis at Moorfields. The MISER system now provides a complete subjective analysis between units, branches and departments, coupled with functional analysis in accordance with the new requirements of DHSS. There is also a further interlocking functional analysis based on the needs of local departmental heads and line managers. It should be emphasized that all analysis statements, at whatever level, automatically provide budgetary comparison for the current period, the period to date, and indicate the remaining allocation available for the unexpired portion of the financial year. The content of these statements can be varied at any time.

Within the scope of this article it is not possible to describe all of the many functions which are available, but the broad headings of operation are as follows:

Stock costs and costing control.
Stock status and movements.
Suppliers' ledger and remittance advices.
Direct credit transfer payments.
Payroll and payroll integration.
Budgetary control.
Nominal ledger and trial balance.
Management activity analysis.
DHSS activity analysis.

The following descriptions will not provide readers with basic technical detail; but an attempt has been made to highlight the more important, and it is hoped, interesting features of the MISER system, and to stimulate further interest in the broad principles which have been applied at Moorfields for a number of years.

Data input and validation

The method by which data is prepared for input into a system must receive special consideration. Some of the methods which are currently employed involve the use of more man hours than would be required to produce the same end-product without resort to the use of a computer. This problem is particularly acute in the case of a small authority such as Moorfields where the use of a computer system is justified not so much by the volume of through-put, but by the need for multiple analysis of data. The answer to this problem at Moorfields has been achieved by the use of NCR 32W equipment which will produce punched paper tape and as a by-product of the same operation a print-out of the data and an individual record card, if required. The

use of this equipment has eliminated the need for any form of manual listing of data and subsequent card punching. The need for manual intervention has been further reduced by ensuring that data is punched direct from source documentation which only requires to be checked and coded within the Finance Department. An additional advantage of this method is that the NCR 32W equipment is so simple in operation that it is unnecessary to employ specialist operators; the whole function of data preparation being carried out by the clerical staff normally employed in the various sections involved. A further advantage of the use of this equipment is that data punched on to the paper tape does not require to be in any particular order—the system is designed to accept complete 'random input'—thus the work of the department can be organized according to workload and according to equipment availability.

All data entering the MISER system is automatically vetted by a series of comprehensive checks and tests within the data input and validation function. The content of the batch header is such that an individual transaction can be pin-pointed within the system and all transactions can be carefully screened and vetted for correct format and content.

Two reports are available from the validation run: either a complete listing of all input with errors highlighted, or a listing of only those transactions which are incorrect, or invalid. A special feature of the system is that a number of validation runs can be undertaken before it is necessary to initiate the main up-dating run for the period concerned. By this means errors are eliminated before the final processing run takes place, and since the whole of the system is self balancing the accuracy of the end-product is known before the print-out actually takes place. Although punch paper tape is currently being used the program can be easily adapted to accept a variety of input such as punch card or magnetic tape.

The coding structure

In order to achieve maximum flexibility an expanded coding system has been adopted. For operational purposes the system is centred on the subjective analysis contained within the nominal ledger function. Three levels of coding are involved:

Subjective account codes.
Objective account codes.
DHSS analysis codes.

To reduce the complexity and length of coding required for computer input records, the master records contained within the nominal ledger subjective analysis have been so organized that each subjective code has its DHSS analysis code. It will be seen that by adopting this method it is unnecessary to include the DHSS code in data input records.

The NCR 32W punch paper tape equipment used at Moorfields for

the preparation of all input data is linked to a verifier thus it has been possible to extend the use of check digits to the subjective and objective codes.

The three categories of the coding structure are as follows:

(*a*) Subjective account codes are split into two parts:
  (i) Main Code—4 characters.
  (ii) Check Digit—2 characters.

(*b*) Objective account codes are split into three parts:
  (i) Branch or Unit—2 characters.
  (ii) Department or Function—3 characters.
  (iii) Check Digit—2 characters.

(*c*) DHSS analysis code:
  (i) A main code of 3 characters.

It should be noted that the inclusion of a branch or unit code in the objective section will automatically generate the same sub-analysis within the subjective section.

When setting up master records the three types of code are always included; the DHSS analysis code is not required for any other purpose. During the coding of transaction data it is only necessary to use the subjective and objective codes. The correct DHSS analysis code will automatically be brought into use during processing by the presence of the subjective code.

Payroll integration function

The MISER suite of programs includes a comprehensive payroll system capable of dealing with every category of staff. Maximum flexibility has been built into the program so that changes in conditions of service can be easily accommodated. It is not possible within the scope of this brief article to describe the payroll function but it should be said that an additional program, number 28 just completed, will enable payroll data to be fed into the system through the use of our NCR 32W equipment. From next April it will be possible to punch paper tape direct from source documentation thus eliminating the need for manual listing and subsequent card punching. A unique feature of this new program is that a single operation on the NCR 32W equipment will simultaneously produce punched paper tape, a check listing of the input data, an automatically up-dated personal detail record card for each individual, and a record card per employee which collates period by period pay details throughout the financial year. The operation is organized so that the two record cards per individual employee will reflect every transaction, permanent or temporary, that has been introduced into the payroll system during the pay year.

Approximately 70 per cent of total expenditure in the Health Service is associated with salaries and wages. It is obviously essential for this expenditure to be incorporated into the management information

function accurately and easily. Within the MISER system this payroll data integration function is automatic. Without manual intervention, the payroll linkage program passes information generated by the payroll function directly into the relevant subjective analysis budgetary comparison section of the nominal ledger. Cost data is also passed forward to the management information function at both cost-centre levels and the DHSS accounts analysis is also up-dated. This action is triggered by the inclusion of the selected unique subjective coding and the cost-centre objective coding in the individual payroll master records. When these codings are locked into the master records, true gross cost per employee will always be extracted and passed forward according to the instruction for the time being. In cases where staff are employed in more than one department accurate proportioning of gross cost takes place; up to four divisions of gross cost per individual can take place.

Changes to payroll rates and details are automatically reflected in the nominal ledger. Ledger details and credits are generated and passed forward so that a true trial balance is maintained and a selection of reports maintain the audit trail of the main payroll function.

As a back-up to the management information function monitoring schedules are produced as a by-product of the payroll integration function. These schedules include the following listings:

(*a*) Cost-centre salary allocation input list
This lists details of all employees engaged in more than one department and offers a permanent record of the sub-division of their activities.

(*b*) Cost-centre salary allocation employee list
This is a list of every employee in employee number order. It gives statistical information and records the subjective code, the cost-centre code, and cost-centre charge against each individual.

(*c*) Cost-centre salary allocation cost-centre list
This summarizes the charges made to each cost-centre in cost-centre order. Details of all employees charged to a cost-centre are listed, including the subjective codes and individual amounts of gross cost.

These listings have many uses and the information content can be expanded or contracted according to the requirements of local management. A few examples of the use made of these listings are:

(*a*) The state of staff at all cost-centres can be seen at a glance.
(*b*) As the listings are up-dated at the end of each pay period, movements during any given period can be traced and abnormalities highlighted.
(*c*) Major deviations reflected in any of the budgetary control sections can be quickly traced and the exact cause of such deviations can be tabulated and examined in detail.

(*d*) The listings are a major aid to forecast budgeting as the information content is always up to date and provides an immediate basis for discussion with budget holders.

(*e*) In the exercise of financial control, the Treasurer is always in possession of maximum information and therefore is better able to know when explanations should be called for.

Collation and analysis of personal statistics is not included in the MISER system because, at the present time, the limited need for such a function at Moorfields would not justify the cost of introduction and running expenses. The possible future need for such a function has, however, been taken into account and within the payroll and integration functions a number of latch-on points have been provided. There will, therefore, be no difficulty if future requirements of the Service justify the introduction of an additional program to perform this function.

Nominal ledger function

This function is the central feature of MISER and deals with all the accounting requirements of an Authority. The method of operation is based on recognized accounting principles and, by use of a trial balance and budgetary comparison, it provides complete control over all accountable expenditure presenting results in a format acceptable to both management and auditors. Reliability and security of the system is further enhanced by the incorporation of a comprehensive audit trail of all input and intermediate data generated by other parts of the system.

The nominal ledger function receives valid transactions generated by the stock control and costing function, the suppliers accounts and purchase accounting function and the payroll integration function together with direct postings from the validation runs. These data inputs are collated to ensure that all information has actually reached the nominal ledger function.

The existing sections within this function are as follows:

Revenue expenditure.
Direct credits.
Other income.
Central administration expenditure.
Clinical and other research expenditure.
Nurse training expenditure.
Capital developments.

Other sub-divisions may be added as required and within the divisions, the analysis is subjective.

Budgetary comparisons are shown by accounting periods and progressive year-to-date. Over and under spending related to each subjective analysis is highlighted and there is a special facility by which total budgets can be readily modified.

Within each subjective code and its comparison with available budget there is a facility for the further breakdown of expense over a maximum of 99 units.

In addition to receiving reports for each of the sections noted above, other budgetary comparison reports can be generated on two bases. At Moorfields this facility is used for Committee and/or Departmental Head reporting. The content of these additional reports can be selected at random—thus a user can isolate certain types of information of specialist interest, for example, that relating to a Medical Supplies Committee, or information required by a Group Catering Officer.

To facilitate the exercise of budgetary control, percentage variations can be stipulated. The introduction of such percentages will highlight only those codes where expenditure has deviated beyond the set limit and this will automatically generate exception reports; these reports will always be in addition to the full status reports.

Budgets for the full accounting year are inserted into the system and these are automatically allocated over 12 periods.

The nominal ledger section of this function consists of the following:

Current accounts.
Sundry debtors controls.
Creditor controls.
Suspense account.
Stock account controls.
Cash accounts and controls.

The coding structure is fully expandable up to a limit of 99,999 divisions. The range has three levels—services, sections and accounts—the point at which these will trigger is pre-determined by the user and may be freely adjusted to accommodate new requirements.

It is essential that managers and departmental heads should be able to readily understand and assimilate information contained in reports. To facilitate this, 40 alphanumeric characters have been included so that descriptive and meaningful names can be inserted against all codes.

The budgetary comparison facility is not confined to only one part of the coding structure. At the user's discretion, the major code level of all services may be budgetary or non-budgetary.

The nominal ledger function has been designed so that it forms the basis for the production of working internal management information statistics at local level. It also forms the basis for the production of management information statistics in the standardized format required by DHSS.

The management information function

This function is at two levels, namely: *Objective Analysis* in accordance with the requirements of DHSS, and *Management Information* in accordance with the requirements of Authorities and their line managers.

It is at this point that national standardization of computer functions and complete flexibility at local level become compatible within the MISER system. Local flexibility has, perhaps, been the major stumbling block of most regionally-based computer systems. Until recently it had usually been assumed that basic specifications had to be accepted by all users and once a system had become functional modifications to meet the particular need of a single user could not take place unless all other users were in agreement and accepted the same modification. This thinking has now changed; unfortunately space will not allow for the full development of this particular aspect, but this problem was recognized at the inception of MISER early in the 1960s, and it is in this field that MISER has overcome an acute problem and thus the system now forms a suitable basis for the introduction of an area, regional and national system.

Management information provided by any system must be completely accurate and understandable by those not familiar with the interpretation of statistical data—if these criteria are not met the usefulness of the information is doubtful and any decisions based upon it are questionable. It has been demonstrated that the management information provided by the MISER system is derived directly from the integrated nominal ledger function, thus it is always accurate. The format of information statements has been designed so that print-outs can be distributed immediately to line managers and departmental heads. The ability to use up to 40 alphanumeric characters for description of all the many codes ensures the statistics are understandable.

The principal feature of the management information function is that all relevant expenditure is analysed according to local cost-centre requirements (this is flexible) as well as in accordance with the standardized DHSS accounts format (which, again, can easily be changed in the event of rethinking by the Department). The allocation of cost-centres or accounts is entirely at the discretion of the user of the system. The local cost-centre breakdown is at two levels: the major level is at unit or branch; the minor level is at department or function within the unit or department. By the use of this method the range of possibilities is vast and up to 99,999 local cost-centres are available for use.

The coding structure is so arranged that all the information required for this function already exists within the system (in every case from a single input of an original transaction) thus utilizing the power of the Univac 1108 computer complex maintained by the Hospital's computer consultants to reduce to a minimum the effort required to obtain relevant information. This reduction of effort is further assisted by the fact that the two levels of analysis produced can function separately or codings can be so arranged that one analysis may complement the other.

The standard form of budgetary comparisons generated in the nominal ledger function are maintained throughout the cost-centre analysis at both levels and the DHSS accounts analysis.

Provision has been made for the production of two unit costs at all levels of analysis and the method of calculation is flexible and adaptable to any change of emphasis that may occur. Currently data is organized to meet the objective accounting and cost analysis requirements of DHSS, but the system is constructed so that it can cater for future refinements.

Conclusion

Whilst it is recognized that MISER is not the most sophisticated system in use in the Health Service, it has been noted with great interest—and not a little surprise—that, according to available information, it is, perhaps, within the field of management accounting, the most comprehensive fully integrated system currently in operation. This may, perhaps, result from the fact that Moorfields has, since early 1960, concentrated on producing systems which are quickly operational and covering the whole spectrum of the accounting function. The alternative is, of course, to produce a few isolated functions incorporating every refinement of detail and sophistication; the true value of some of the end-products of such systems is questionable.

The system is readily adaptable and would meet the needs of any Authority within the reorganized Health Service. The coding structure is such that by the simple procedure of attaching different values and designations to the codes the design of the common accounting structure can accommodate:

Community Health Councils;
District Headquarters and Services;
Area Health Authority Departments and Services;
Regional Health Authority Departments and Services;
Capital Accounting; and
Endowment Funds.

The copyright of the system vests in the Crown through the agency of Moorfields Eye Hospital, but development is such that a bureau service for other users can be provided, or, as an alternative, the system could be introduced, in part or in full, into an existing computer complex.

In conclusion it is of interest to note that the method by which MISER has been developed has enabled the system to come into existence without the need for capital expenditure and the development costs have been no more than approximately £2,000 per year spread over the period during which the system has been in use.

DP People—Who Do They Think They Are?

D. W. CROISDALE, Civil Service Department

Derrick Croisdale is Head of Automatic Data Processing training in the Civil Service College. Since 1960 he has been involved continuously in the use of computers for administrative data processing purposes. His experience covers programming, systems design and project management. His current work brings him into contact with work other countries are doing with the EEC in the area of career development and training for staff employed in computer-based systems. In the article that follows Mr. Croisdale expresses some personal views. —*Editor.*

Why we should try to answer the question

This is a difficult question to answer—even for data processing people themselves.

In spite of attempts to define job titles and descriptions[1, 2] and the existence of many of them for over a decade, a civil servant engaged in data processing in one department cannot, with certainty, accurately define the duties of another civil servant in another department who claims he is a *systems analyst.* In all probability one need not cross departmental boundaries to demonstrate the confusion—indeed, some cynics would claim that confusion exists within a project or at an installation.

The staff grading review team,[1] who did a first-class, path-finding job, acknowledged that the situation was confused. In the end they had to use such job titles as:

Systems Analyst (or Systems Analyst/Senior Programmer);

Senior Systems Analyst (Project Leader/Data Processing Manager).

This reflects the real world of data processing in which the job title systems analyst means all things to all men. It suggests that a systems analyst is expected to have the fact-finding and deductive skills of a Holmes, the imaginative creative brilliance of a Corbusier, the leadership qualities of a Churchill, the salesmanship of a Cohen, and the management ability of a Robens. A knowledge of accountancy, mathematics, sociology, ergonomics, cybernetics and economics provides the cement with which to build your complete systems analyst. It goes without saying that he must have a thorough knowledge of business and the particular application with which he is expected to perform miracles.

This article is a modest attempt to identify the kind of people we ought to be building. It is not an academic exercise. The author is Head of ADP Training in the Civil Service College where each year about 1,500 students pass, metaphorically speaking, through his hands. It would hardly help the efficiency of data processing in the Civil Service if square people were being turned out for round jobs.

It is the future we are concerned with so let us start with a look ahead. If you are embarking on a journey it helps to have some idea of where you want to go—or at least to know the direction in which you want to head. In the author's view the operational characteristics of data processing within the next decade will include:

extinction of low-level languages;
formalization of program design;
formalization of computer-systems design;
increased automation of program production;
continued presence of large centralized computer systems;
data-base systems well-established with the characteristics set out in CCA Guide No. 4[3];
large number of free-standing mini-computers;
hierarchical networks;
topological networks.

In this kind of environment success or failure will be determined more by sociological and organizational considerations than by technical, computing considerations. In the coming decade the resolution of the conflict between centralized and decentralized organizations will become more difficult because the freedom of choice is widening to include not only hierarchical and topological network architecture, but also non-network distributed systems based on free-standing mini-computers. System security will be a heavily weighted factor. The choice of organizational structure and system architecture will require decision-making at the highest levels of departmental management. What roles should these managers play in the development of major projects; how should they be trained and educated? This article is an attempt to define such roles—and others besides—and to indicate the kind of training required.

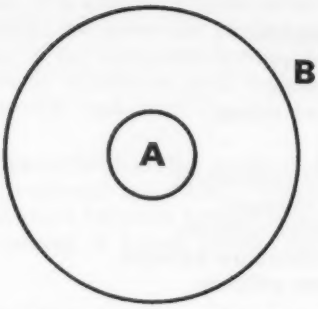
Classifications and definitions—aids to enlightenment

Classification is important in the advancement of knowledge—in data processing as elsewhere. Let us start with the systems concept. The systems model which best meets the needs is shown in the diagram opposite.

System A is the computer system. This is the system of hardware and software associated with a central processor or combination of processors. It is the system seen and experienced by the computer-system professionals (who will be defined later).

System B is the host system. This encompasses the computer system and is superior to it. It is the system seen and experienced by host-system managers and staff (whose roles in the development and implementation of systems will later be defined).

This model, simple though it is, is crucial to the analysis of the roles to be played by people in the development and implementation of systems. The author stresses that it is for the host system to define the



computer system, and not vice versa. Too frequently the computer system defines the host system, and that spells danger if not disaster. In the words of Edgar Wille: 'The computer system belongs to the user department and to user management, and the computer is their management tool.'[4] The author prefers the term host system instead of 'user' because it emphasizes the proper relationship between the systems.

Now let us examine the impact which computers have on the people who are concerned with their use in administrative data processing systems. No one will question the marked trend towards specialization in the area of the computer system. No one will question the need for effective management of projects. What is in question is *who does what in the host system and the computer system?* Before dealing with this question some assumptions must be made.

The author assumes that:

vocational and professional data processing qualifications are desirable goals[5];

trends in the costs of hardware and software suggest that increasing attention will be paid to methodologies and techniques which reduce the relative cost of application and systems software[6];

because current and future projects show an increasing preponderance of large systems there will be an increasing need for highly trained specialists;

the roles of host-system managers and staff will increase in importance in the development of systems and management of projects.

It is the author's belief that the principal specializations for which advanced training must be provided are:

Management

project management
operations management
communication systems management
data-base administration
information systems management

Systems
- systems analysis
- systems design
  - host system
  - computer system

Software
- design and production
  - system software
  - application software
  - communications software
  - data-base software

In the above list it is those under *Systems* that need clarification (if only because of current confusion). Analysis and design are quite separate and dissimilar functions. Analysis is concerned with identifying component parts of a whole thing; design is a synthetical process—putting together building blocks to make a structure. Analysis and design require different operations and have totally different end-products.

Analysis is concerned with investigation and an analysis of what is so found in order to define for the host-system management what the host-system requirements are. The document produced is often called the *Job Specification* or *User Requirement.*

Design is concerned with defining a host system (and its embedded computer system) that will best meet the needs of the User Requirement.

Allocation of specialisms

We are now able to decide where the above specialisms should reside—either in the host system or the computer system. In the author's judgment the general distribution will be:

Project management	= *Host system* (responsibility for overall system). This does not preclude there being a project manager for the computer-system development
Operations management	= *Computer system*
Communication systems management	= *Computer system*
Data-base administration	= *Host system*
Information systems management	= *Host system*
Systems analysis	= *Host system*
Systems design	= *Host system* and *Computer system*
All software specialization	= *Computer system*

The allocation of specializations in this way compels a man to identify himself either as a *computer-system professional* or as an *organization*

manager or administrator. It is a matter of orientation—the former will face the centre of the system, the latter the perimeter; they stand back-to-back at the boundary of the computer system. This approach leads to the clearest of systems interfaces and banishes fuzzy boundaries between 'computer people' and 'users'.

Assignment of responsibilities for project development

Projects cannot be developed successfully without an explicit understanding of responsibilities between host-system and computer-system managers. In the context of future major projects the assignments suggested are:

Project stage	*Primary*	*Secondary*
Preliminary study	Host	Computer
Detailed investigation	Host	Computer
Model system design	Equal	
Procurement of hardware and software	Computer	Host
Implementation		
creation of systems	Equal	
systems proving	Host	Computer
changeover	Host	Computer
Maintenance and review	Host	Computer

What is clearly emerging is that the design, development and implementation of computer-based administrative systems are matters far too serious to leave solely in the hands of DP people!

What is said about marriage applies equally to the development of computer-based systems: 'not by any to be enterprised nor taken in hand lightly, wantonly, inadvisedly . . . but reverently, discreetly, advisedly, soberly—and in fear of God'. (That was written before the advent of the Central Computer Agency hence the anachronistic reference to God.) DP people must not think that they alone have a monopoly of the virtues required—the other partner in the enterprise possesses talents too.

Attention Personnel Management!

The personnel management implications are far-reaching. It has long been recognized that computer-system specialists need to be highly trained and well educated. The Civil Service College currently provides a progression of courses—introductory, basic, intermediate and advanced—that cater for the development of the computer-system professional, the man who opts to make his career in data processing. What the Service now needs to recognize, in the author's judgment, is that the able host-system manager or administrator has an equally advanced professional role to play in the development and management of administrative systems using computers. He needs training to the most advanced levels in:

(*a*) Project management.
(*b*) Systems analysis.
(*c*) Systems design (host system).
(*d*) Information systems management.
(*e*) Data-base administration.

Long-term investments in people have got to be made—painful though it may be for the short term. The training of an able host-system manager or administrator will take about 15 months full-time, partly at the Civil Service College and partly at a university or polytechnic, and will result in a postgraduate Diploma in Information Systems Design. There is no short cut. The first opportunity to make this investment arises in 1975 and the author will be pleased to offer guidance and facilities.

Well, who do DP people think they are?

Those DP people who bring themselves to read this far (it may well have been a distasteful task for some!) may be thinking afresh—the author hopes so. In his view they ought to be highly trained professionals working in a computer system which is part of a host system designed, developed and managed by equally well-qualified people.

REFERENCES

1. *Computer Grading Review.* This report dated March 1974 was produced for internal Civil Service use, but copies are available from Civil Service Department (SIEB) Whitehall, London SWIA 2AZ, price £1·50.
2. *Staff Titles and Job Descriptions in Commercial Data Processing,* published by Her Majesty's Stationery Office, price 17½p. (In this publication, compiled by the Ministry of Technology in 1967, the job title 'systems analyst' is not to be found—except in small print in an appendix!)
3. *Program tuning and optimization,* CCA Guide No. 4, published by Her Majesty's Stationery Office, price £1·50. See paragraph 2.3.3:
   direct access storage capacity of the order of 10^9 characters;
   designed to accept 'unanticipated' transactions operating on existing data;
   controlled as a central system resource;
   in-line up-date capability.
4. 'Training to make the most of the computer' by Edgar Wille (Head of Recruitment, Training and Information at the NCB Computer Power Training School), *Personnel Management,* October 1974.
5. *Staffing of Computer Projects,* CSD General Circular GC/44, 6th March 1974.
6. The cost of application software for administrative data processing in the UK Civil Service is estimated by the author to be about £26 million p.a. (see (*a*) below) compared with an annual investment in hardware of, say, £15 million.
   (*a*) 2,500 staff × £3,250 gross cost = (say) *£8 million*
   Plus cost of computer time:

   180 configurations
   × 40 hours p.w. software development
   × 50 weeks p.a.
   × £50 running cost per hour = *£18 million.*

Review of General Register Office Procedure in Northern Ireland

R. A. JOHNSTON, Civil Service Management Division, Northern Ireland

Introduction

A Review Body on Local Government in Northern Ireland, chaired by Patrick A. N. Macrory submitted a report (The Macrory Report) in June 1970. Amongst other things this report recommended that in place of the then 73 Local Authorities there should be not more than 26 District Councils working as Local Authorities responsible to their electorate.

Prior to reorganization of local government the provision of a registration service of births, deaths and marriages was the responsibility of the Ministry of Finance and was based on the appointment of Superintendent Registrars and Registrars by the Minister on the recommendation of the Registrar General after nomination by the appropriate Health Authority. There were 120 Registrars covering 167 Registrar Districts working through 27 Superintendent Registrars, many of whom were Clerks to the Rural District Councils. Superintendent Registrars held the Registers for their area dating back to 1864 when registration commenced. In some districts, registration staff were salaried officials of the Health Authority while in others the staff were fee-paid, i.e. they received fees from the Health Authority and pocketed fees for the sale of birth, death and marriage certificates. Generally the boundaries of Superintendent Registrar districts were synonymous with those of the Rural District Councils and embraced several Registrar districts which were, in the main, the districts of the dispensary doctors in the old Poor Law Unions.

After reorganization, because of redrawn boundaries which defined the 26 District Councils, the original registration records related to Areas with boundaries which differed from those of the District Councils. It was considered to be impracticable to sub-divide the old registers between the 26 new districts. It, therefore, became necessary to devise a new system of maintaining records in which the old registrations could be incorporated.

O & M survey

The Organization and Methods Branch of Northern Ireland Civil Service Management Division were asked to examine the methods of holding records at the Northern Ireland General Register Office

COPY

Figure 1
Actual page size 16 in. x 10 in.

BIRTHS registered in the District of..... in the Superintendent Registrar's District of .....

in the County of .....

No. (1)	Date and place of birth (2)	Name (if any) (3)	Sex (4)	Name, surname and dwelling-place of father (5)	Name, surname and maiden surname of mother (6)	Rank or profession of father (7)	Signature, qualification, and residence of informant (8)	When registered (9)	Signature of registrar (10)	Baptismal name, if added after registration of birth, and date (11)
	19.....				*formerly*				*Registrar*	
	19.....				*formerly*				*Registrar*	
	19.....				*formerly*				*Registrar*	
	19.....				*formerly*				*Registrar*	
	19.....				*formerly*				*Registrar*	

Any notes to be copied from the original entry must be entered in the opposite margin

Insert in this margin any notes which appear in the original entry

.....
S.R.'s Initials

(NIGRO) in Belfast and to consider methods for the retrieval of information and the reproduction of entries. This article describes the old and proposed systems for birth registrations only as that for deaths follows a similar pattern. Marriage registrations were excluded from the terms of reference as it was decided that, due to the complexity of the marriage code, the entire Northern Ireland marriage registration system should be reviewed at a later date.

Old system

Persons wishing to register a birth did so at a Registrar's Office. The majority of these were located in doctors' surgeries and were open for only a few hours each week. Some Registrars also attended maternity hospitals at specified times.

Details of the birth were recorded in manuscript directly into registers from verbal information provided by the person registering the birth. The information was not always accurate either through mistakes by the informant or in transcription. Further errors occurred when copies of the registrations were being typed to make up the quarterly return for NIGRO.

A full register contained 500 registrations, five on each side of a page. As each register was filled it was passed to the Superintendent Registrar in the area for safe keeping.

Copies of all registrations were typed out quarterly by the Registrars, checked by the Superintendent Registrars and forwarded to NIGRO (*Figure* 1). These copies were bound into large unwieldy volumes which, dating from 1922, constituted the records of NIGRO. Copies of registrations prior to the partition of Ireland in 1921 are held by the General Register Office in Dublin.

Certified copies of entries could be obtained from the appropriate Superintendent Registrar for any event registered since 1864 providing the place of birth was known. If the place of birth was not known a certificate could be obtained on application to NIGRO if the event was registered on or after 1922. If the event was registered prior to 1922 and the place of registration was not known it was sometimes necessary to contact the GRO in Dublin.

When a certified copy of an entry was required the details had to be written or typed on to a special form which was checked, sealed and issued. This process was both time consuming and liable to error.

Numbering system

Since the 1940s National Health Service numbers were allocated to each person at the time their birth was registered. This number was made up from an alphabetical sequence of four letters issued by NIGRO and the entry number in a register. One register would have, for example, prefix UPLD and the next register issued would be UPLE. In recent years the system was changed to incorporate a computer check digit, and computer print-out showing a unique

Births and Deaths Registration Act (Northern Ireland) 1967, Section 54.

Figure 2
Actual size 15 in. x 10 in.

CERTIFIED COPY OF AN ENTRY OF BIRTH

ISSUED FOR THE PURPOSES OF

BIRTHS registered in the District of

No.	Date and Place of Birth	Name (if any)	Sex	Name and Surname and Dwelling-place of Father	Name and Surname and Maiden Surname of Mother	Rank or Profession of Father	Signature, Qualification, and Residence of Informant	When Registered	Signature of Registrar	Baptismal Name if added after Registration of Birth and Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

Certified to be a true copy of an entry in a register in the custody of the Registrar General and given under the SEAL of the General Register Office, Belfast.

this day of 19

Receipt stamp for fees paid must be affixed here

The Registrar General shall cause any certified copy of an entry given in the General Register Office to be stamped with the seal of the Office, of which judicial notice shall be taken.

CAUTION:– Any person who (1) falsifies any of the particulars on this Certificate, or (2) uses a falsified Certificate as true, knowing it to be false, or (3) passes as genuine any reproduction of this Certificate, knowing that the reproduction is not the Certified Copy, is liable to prosecution.

reference number for each entry was produced. The reference number was made up as follows:

4 letters, e.g. UPLD (U being a constant signifying Ulster).
3 numbers, e.g. 001–500 corresponding to the entry number in the registration book.
1 number/letter which was a check digit.

Errors occurred regularly with this transcription of numbers from computer print on to certificates, etc.

Proposed system

Due to the reorganization proposed in the Macrory Report all the registers held by the Superintendent Registrars had to be centralized at NIGRO, Belfast. This meant that approximately 7,000 registers containing 3,500,000 records would be in one office in Belfast. The possibility of microfilming these registers was explored but it was decided against this system as:

(*a*) It would prove expensive to microfilm and create a composite index for the film.
(*b*) Demands for certificates from these entries would reduce rather than increase with the passage of time.
(*c*) There was sufficient storage space for the records which could not be destroyed in any case.
(*d*) A photocopying system for reproduction of entries was proved feasible.
(*e*) An index, although not ideal, was available for the existing records.

Reproduction of entries

As all the original registers from 1864 to 1973 were of standard size it was possible to recommend a photocopying system to produce 'long' certificates. Templates (*Figure* 2) with cut-outs were made in the form of the certificate. When the relevant page of the register was placed against the template all the details required were visible for the plain paper photocopier that was to be used. Unfortunately, the details of the register were not always written in exactly the same place and as the required page was placed face downwards the operator could not accurately align the template with the register. However, with the co-operation of the Service Department of the photocopier manufacturer a modification was fitted which overcame the problem. Normally when the print button was depressed, two fluorescent lamps were illuminated and were driven across the platen glass to scan the original. As they travelled they actuated several micro switches which controlled the paper feed and copying process. The modification consisted of a switch fitted on the control island which allowed the lamps to light when the print button was pressed but also disconnected the drive to the lamps. The cut-out of the template was thus illuminated and this

BIRTH registered in the district of (Form 1 Rev)

1	Child	— Surname	:
2		— Name	:
3		— Sex	:
4		— Date of birth	:
5		— District of birth	:
6		— Place of birth	:
7	Father	— Name & surname	:
8		— Occupation	:
9	Mother	— Name & surname	:
10		— Usual address	:
11		— Maiden surname	:
12		— Surname at marriage (if different from maiden surname)	:
13	Informant	— Qualification	:
14		— Address (if different from that at 10 above)	:
15		— Signature	:
16	Date of registration		:
17	Signature of Registrar		: Registrar

District of Registration: BIRTH Ref. No.

CONFIDENTIAL

In all cases—: Mother's date & place of birth: Age at birth of child:

Where parents are married to each other—: Father's date & place of birth: Age at birth of child:

Date and place of marriage: Duration of marriage:

Has the mother been married more than once?

How many children has the mother previously had by her present husband and by any former husband? (excluding birth or births now being registered): Live born: Still-born:

If multiple birth—give other reference numbers(s):

Fi

enabled the operator to adjust the position of an entry on any page of the register accurately. The switch was then put in the off position reconnecting the drive to the lamps and the certificate was produced with complete accuracy and no wastage in time or materials.

In the interests of security the photocopying paper used had to be overprinted in green 'fugitive' ink which runs if a liquid is applied. The paper also contained a water mark 'GRO CERTIFIED COPY'. Finally, each copy was embossed with the NIGRO seal, stamped and initialled. It was thus considered that all possible precautions against forgery had been taken whilst providing a rapid and comparatively inexpensive system of reproduction.

Due to the nature of the records it was decided that 'short' certificates would still have to be typed or hand written.

Future registrations

In October 1973 District Councils assumed responsibility for the registration of births and deaths. Although this in effect reduced the number of registration offices to 26 these were to be manned on a full-time basis as opposed to the former 120 centres most of which were manned for only a few hours each week. Part-time registration facilities would also be provided at maternity hospitals where over 90 per cent of all births take place. If the birth was not registered there, it could be registered in the district in which the mother of the child lived whereas previously it could only be registered in the district in which the birth occurred.

In designing the new system all the drawbacks of the old system were taken into consideration and it was decided that persons wishing to register a birth should complete a Form of Particulars. This form could be completed either at a Registrar Office or in a maternity hospital. It would be handed to the Registrar who would check it and then have details of the registration typed on a Registration Form (*Figure* 3). The Registrar would then read over the completed Registration Form to the informant who would agree the information before signing it.

Copy certificates

Copy certificates would be produced as required using a plain paper photocopier with appropriate overlays for 'short' (*Figure* 4) or 'long' certificates.

At a specified time each week all original Registration Forms would be despatched to NIGRO. This would take the place of the existing quarterly returns which were submitted by the Superintendent Registrars to NIGRO.

Copy registrations would be held by the Registrars until 12 months after the date of registration when they could be destroyed. During this period the Registrars would issue certificates as requested. Thereafter certificates could only be issued by NIGRO in Belfast. The copy certificates in local offices would be filed laterally in alphabetical order to facilitate retrieval.

Births and Deaths Registration Act (Northern Ireland) 1967, Section 52.

SHORT BIRTH CERTIFICATE	

CERTIFIED to be a true copy of an entry in a register in my custody

Registrar.

Date.

Receipt stamp for fees paid must be affixed here

CAUTION: - Any person who (1) falsifies any of the particulars on this Certificate, or (2) uses a falsified Certificate as true, knowing it to be false, or (3) passes as genuine any reproduction of this Certificate, knowing that the reproduction is not the Certified Copy, is liable to prosecution.

Figure 4

The advantages of this system are that the initial registration would be checked both by the Registrar and, at the time of signing, by the informant. This would substantially reduce the possibility of errors in registration. At all stages thereafter information taken from the original registration would be extracted by photocopying so that there would be no possibility of transcription errors and checking would be reduced to a minimum with a consequential significant reduction in staff time.

Numbering system

As the registration system was changing to a loose-leaf system the O & M team decided that stricter measures should be introduced to ensure that:

(*a*) Any number could be allocated only once.
(*b*) Transcription errors would be reduced to a minimum.

It was finally decided that pre-printed self-adhesive labels should be produced by computer. The numbering system was also changed to provide a more useful reference number. This was carried out with the assistance of the Medical Records Linkage Research Unit, Department of Medical Statistics, Queen's University, Belfast, who were collaborating with the Research and Intelligence Unit of the Northern Ireland Department of Health and Social Services on the development of a medical records linkage scheme. This Unit had under the old numbering system to carry out a re-numbering system on their computer to convert the old numbers, e.g. UPLD 001 Z, to their own numbering system, i.e. F72/00001/2. Re-numbering therefore simplified recording the required information and saved the University computer time. The new system also provided a readily available index number for NIGRO records. It was decided that the new reference number should be made up as follows:

U—Ulster
oo—Year of Issue
oo—Registrar's Reference Number
oooo—Registration Entry Number
o—Check Digit

Accounting system

As the new system was based on Xerography a system had also to be designed to provide accountability for fees received from persons requesting birth certificates. It was decided that serially numbered self-adhesive labels of different denominations would be acceptable. These 'stamps' are affixed to copy certificates and records are kept of all the serial numbers of the stamps.

Microfilming

As stated NIGRO receive registration forms from the District Registrars

on a weekly basis. While it was considered that these new type registration forms have considerable advantages over the old style book they have one significant drawback in that they are much bulkier as each page only contains one registration entry. A considerable storage space, convenient to a Public Office, would therefore have to be provided if these forms were held in this manner. However, this problem should not arise as forms were designed with a view to microfilming them.

At present the new system is in its infancy and as yet sufficient quantities of the new registration forms have not been stored to warrant microfilming. The intention is to microfilm all records and store film convenient to the Public Office in either unitized or roll film. Depending on technological advances in microfilm reader/printers within a year of the introduction of the system a decision will be taken as to the method of reproduction of birth certificates from microfilm.

Sample registration forms have already been microfilmed and copies reproduced using the following system:

(*a*) A dry silver paper print is first produced on a Microfilm Reader/Printer.

(*b*) Next, using an appropriate overlay and this print-out, a further copy is obtained on specially overprinted water-marked photocopying paper using a plain paper photocopier.

While this system produces a good quality copy for members of the public it is hoped to devise a system where an intermediate copy stage will not be required.

Letter to the Editor

O & M—The Professional Approach

Dear Sir,

May I use your columns to open a debate on the ethical approach of O & M officers.

I have been disturbed to find in recent months that there now exists (and may possibly have existed for much longer) two points of view on the ethical approach of an O & M officer to an assignment. One takes the pragmatic view that O & M is a tool of management and as such should be used to further management objectives whatever these might be and however they are being implemented.

The other view is that O & M provides an objective advisory service to management; that it is not a tool and as such it maintains the degree of independence normally associated with a conventionally accepted profession, e.g. an engineer or architect. It is believed by those holding this latter view that this permits them to take an objective view of an

assignment and that in the long run this will be to the advantage of management. Not to do so, might in the short term result in a greater proportion of recommendations being accepted by management but the quality of thinking and the quality of the recommendations, is likely to fall.

I would like to add my personal view that should the 'tool' approach prevail we should not be surprised to find that the work will cease to attract people whose standards I consider add a necessary dimension of quality to the service.

The 'tool' man is essentially a time-server, doing a job to the best of his ability (which is often considerable) for a relatively short period, who is almost certain to return to line management when he is reaching his full potential as an O & M officer. As he is aware of this time limit he will limit his training and his knowledge to what is likely to be required and no more. This indeed would be a fair O & M approach.

What he will not do is extend his knowledge and himself by reading, membership of O & M-style organizations outside the service or by bringing a challenging approach to the work he is asked to do. At the end of his spell he will usually have a good batting average and both he and his superiors will be satisfied. All too often they would fail to see that they have missed glorious opportunities to do a much better job on a much bigger canvas with substantially greater benefits to themselves and the service as a whole.

The counter to this is to encourage O & M staff to take a challenging stance, to think in bigger terms, to extend their knowledge beyond the confines of official training courses, to believe in the importance of what they are doing, to invite the challenging assignment and to act with courage and integrity. In other words to become a 'professional' in the best sense of that term, even if their stay in O & M is limited.

Yours faithfully,

W. S. Ryan
Head of Specialized Training Wing,
Civil Service College, London

Computer Installations for Government Departments

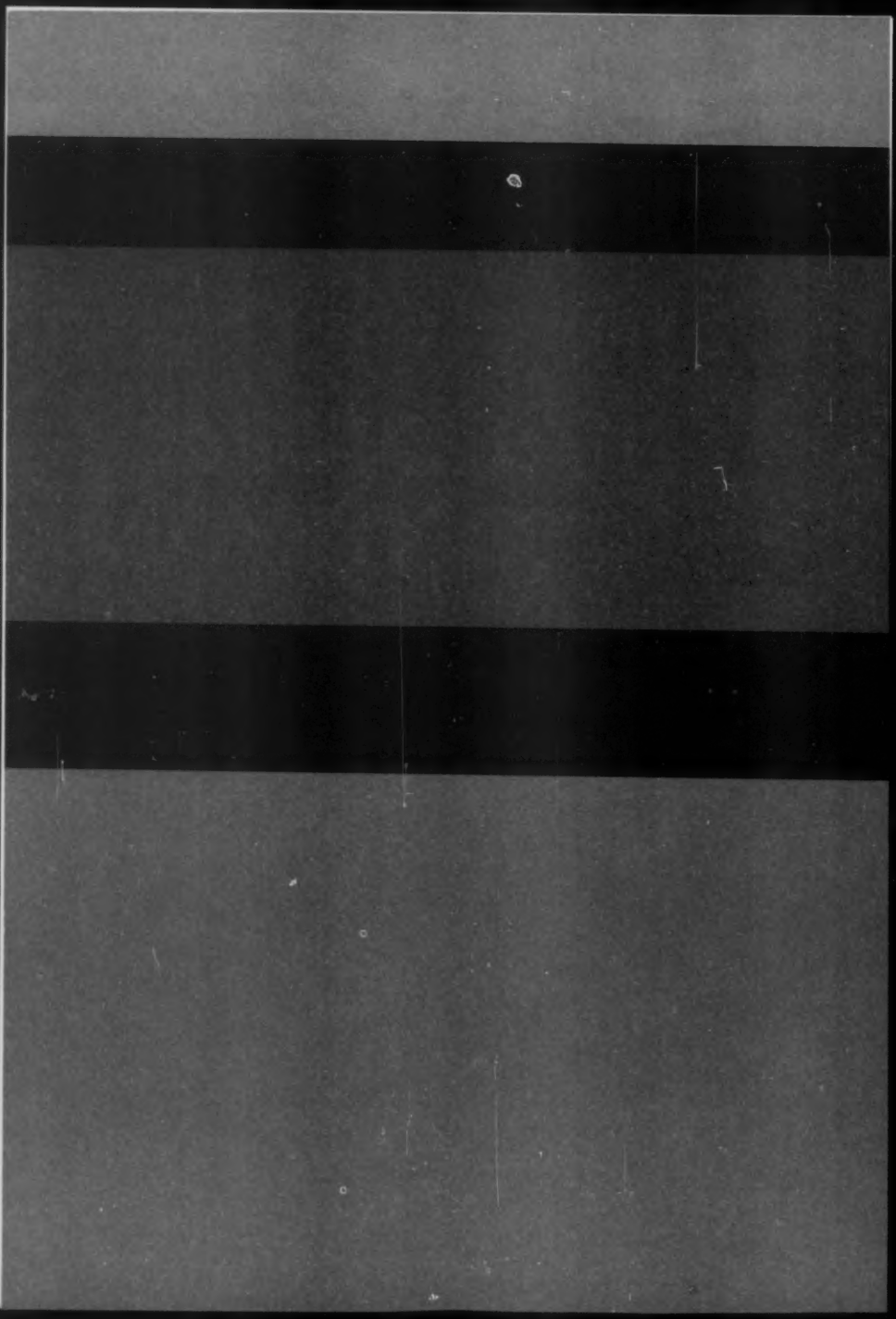
A list of all Government computers as at 1st January 1974 was published as a supplement to the May 1974 edition of MANAGEMENT SERVICES IN GOVERNMENT. Details of computers ordered during the period July to September 1974 are shown in the following table.

DATE OF ORDER	DEPARTMENT[1]	LOCATION	MAIN USES	MANUFACTURER[2] AND TYPE OF COMPUTER
1B Computers on order for administrative and general purposes				
August 1974	CSD	Bracknell	Central Computer Facility	ICL 2970
August 1974	Customs and Excise	Southend	Value Added Tax	ICL 4/72
August 1974	MOD (Army)	Woolwich	Reliability services	ICL 1904S
September 1974	MOD (Army)	Bureau West	MOD bureau facility	ICL 2980
September 1974	MOD (Central)	Liverpool	Bill Paying	ICL 1901T
September 1974	MOD (Air)	St. Athan	Management of aircraft services	ICL 2903
September 1974	MOD (Air)	Aldergrove	Management of aircraft services	ICL 2903
September 1974	MOD (Air)	Kemble	Management of aircraft services	ICL 2903
September 1974	MOD (Air)	Leconfield	Management of aircraft services	ICL 2903
September 1974	MOD (Air)	Medmenham	Management of EEIs	ICL 2903
September 1974	MOD (Navy)	Bath	Naval victualling and armament stock control	ICL 2903
2B Computers on order for scientific and technical purposes				
July 1974	MOD (Central)	West Byfleet	Scientific research	ICL 2970
September 1974	MOD (Air)	Bracknell	Weather forecasting and research	IBM 370/158
September 1974	MOD (PE)	Farnborough	Scientific research	DEC PDP 11/40

[1] Department Key (*Column* 2)

CSD	Civil Service Department
MOD (Air), (Army), (Central), (Navy), (PE)	Ministry of Defence (Air), (Army), (Central), (Navy), (Procurement Executive)

[2] Manufacturer Key (*Column* 5)

DEC	Digital Equipment Company (UK) Ltd.
IBM	International Business Machines (UK) Ltd.
ICL	International Computers Ltd.

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